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KLARQUIST SPARKMAN LLP
121 S.W. SALMON STREET
SUITE 1600
PORTLAND, OR 97204

EXAMINER	
WERNER, DAVID N	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,974	YOGESHWAR ET AL.	
	Examiner	Art Unit	
	David N. Werner	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :20040415, 20050920, 20051020, 20061010.

DETAILED ACTION

1. This is the First Action on the Merits for US Patent Application 10/826,974. Currently, claims 1-56 are pending.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 11, 20, 29, 39, 52, and 59 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The definition of "computer-readable media" in page 11: lines 5-8 of the specification as encompassing "communication media", previously defined in the specification as including "a modulated data signal" (pg. 10: line 31) precludes the claimed "computer-readable medium" in claims 11, 20, 29, 39, 52, and 59 as interpreted under a statutory category of invention, as it has been held that signals *per se* are non-statutory. See *O'Reilly v. Morse*, 56 U.S. (15 How) at 112-114.

Claim Rejections - 35 USC § 102

3. An issue of public use or on sale activity has been raised in this application by the article "Microsoft Debuts New Windows Media Player 9 Series", cited in the Information Disclosure Statement of 13 October 2005. In order for the examiner to properly consider patentability of the claimed invention under 35 U.S.C. 102(b) and 35

U.S.C. 103(a), additional information regarding this issue is required as follows: the most recent Decoding Specification for Windows Media Video V9 as of 04 September 2002. It will be assumed that revision 87, the version incorporated in provisional application 60/488,710 is substantially similar.

Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 8, and 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by "Transcoding of MPEG Bitstreams" (Keesman et al.), cited in the Information Disclosure Statement of 15 April 2004. Keesman et al. teaches an MPEG transcoder based on a cascaded decoder and encoder. Regarding claim 1, settings such as picture type and macroblock modes are used to facilitate transcoding (pg. 497: column 1). This corresponds with the step of "obtaining type values". The transcoder of Keesman et al. performs at least the decoding steps of variable-length decoding, and dequantizing, followed by at least the encoding steps of quantizing and variable-length coding (figure 7). This corresponds with the steps of "decompressing the compressed video" and ""re-compressing the video". The re-encoded picture type is the same as the de-coded picture type (pg. 483: column 2). Then, the picture type decision corresponds

with a "first coding decision". Other encoding decisions, such as quantization scale, are determined independently, depending on desired output quality (pg. 496: column 1). Then, the quantization scale decision corresponds with a "second coding decision". Regarding claim 2, information such as macroblock modes are decoded from an incoming video bit stream (pg. 483: column 2). This corresponds with the step of "parsing the compressed video".

Regarding claim 8, Keesman et al. teaches that it was known in the art to develop a transcoder that includes a decoder that completely decodes an incoming picture. As shown in figure 2 of Keesman et al., a decoder may produce a fully decoded picture $I_n^{(1)}$ by performing the steps of variable-length decoding, dequantizing, performing an inverse DCT, and motion compensating, fully reconstructing an original picture (pg. 483: column 1).

Regarding claim 11, the transcoder of Keesman et al. is implemented as software (pg. 497: column 1). Regarding claim 12, Keesman et al. teaches an MPEG or MPEG-2 transcoder, and so the possible picture types are I-picture, B-picture, and P-picture (pg. 487: column 2). Regarding claim 13, the transcoder of Keesman et al. may be used to output constant bit rate video at a lower bit rate than a constant bit rate input (pg. 497: column 2). Regarding claims 14 and 15, the macroblock coding modes include the intra/inter mode decision (pg. 483: column 2).

6. Claims 17, 20, and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 6,466,623 B1 (Youn et al.) Youn et al. teaches a video

transcoder that generates motion vectors during re-encoding. Regarding claim 17, figure 9 shows one embodiment of the transcoder of Youn et al. This transcoder is a cascaded decoder-encoder type, which produces intermediate decoded signal 920 (column 8: lines 48-53). Since the decoded signal 920 is at least motion compensated, it is assumed to be substantially fully decoded. In recompressing the decoded signal 920, a new motion vector is calculated. Since the new motion vector is calculated as a refinement from a base motion vector from the original video frame (column 9: lines 5-43), it is inherent that the picture type for a re-compressed frame is of the same type as the original picture. As an example, if motion vector signal 626 is null, that indicates that the current frame is an I-frame. Regarding claim 20, the invention of Youn et al. is specified to encompass a software embodiment (column 12: lines 8-14). Regarding claim 21, Youn et al. may be operable on MPEG video (column 4: line 64), which was known to comprise I-pictures, P-pictures, and B-pictures. Regarding claims 22 and 23, since it has been shown that Youn et al. matches macroblock coding mode type in re-compressing (column 9: lines 5-43), it is inherent that picture type and GOP structure type are also matched.

7. Claims 38, 41, 42, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by "Transcoding of Single-Layer MPEG Video into Lower Rates" (Assunção et al. 1997), cited in the Information Disclosure Statement of 15 April 2004. Assunção et al. teaches an MPEG transcoder that achieves a reduction in bit-rate by using a coarser quantization step size (pg. 380: column 1). Regarding claim 38, the transcoder

receives Qin, the input quantization value (pg. 381: column 2). In the example shown, Qin is fixed as 8. The input stream of rate R1 is partially decompressed by performing inverse quantization, and recompressed according to a second quantization function (pg. 381: columns 1-2). The second quantization step size, Qnew, depends in part on original quantization value Qin (pg. 381: column 2). Regarding claim 41, the quantization level is explicitly referred to as a "quantisation step size" (pg. 381: column 2). Regarding claim 42, Qnew also depends on the incoming bit rate Rin and a target bit rate Rtg; in order to achieve a constant bit rate output (pg. 381: column 2).

Regarding claim 53, the transcoder of Assunção et al. 1997 regulates the compression parameter Qnew to produce compressed video at a constant bit rate (pg. 381: column 2).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keesman et al. in view of Youn et al. Claim 3 of the present invention teaches computing new motion vectors in an encoding process of a transcoder. However, in

Keesman et al., motion vectors for a transcoded video are merely re-used from the original video source (pg. 484: line 1).

Youn et al. teaches a video transcoder that generates motion vectors during re-encoding. Regarding claim 3, in the transcoder of Youn et al., an original motion vector 626 from a decoded signal is taken as input in encoder 916 to generate new motion signal 928, which is encoded in new encoded video signal 922 (column 8: lines 56-59).

Keesman et al. discloses the claimed invention except for generating new motion vectors in a transcoder. Youn et al. teaches that it was known to create new encoded motion vectors in the output of a transcoder derived from original motion vectors encoded in the input of a transcoder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add a motion vector generator to the transcoder of Keesman et al., as taught by Youn et al., since Youn et al. states in column 9, lines 36-38 that such a modification would reduce the degradation of the transcoded signal.

Regarding claim 7, in one embodiment of Youn et al., one method of reducing bitrate in a transcoded video stream is frame skipping (column 9: line 44–column 10: line 33). If frame skipping is employed, then it inherently becomes necessary to recalculate prediction modes, as some reference frames are no longer available. In this case, a new base motion vector must be determined for a macroblock.

10. Claims 6, 9, 10, 16, and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keesman et al. in view of "Microsoft Debuts New Windows Media

Player 9 Series", cited in the Information Disclosure Statement of 13 October 2005. Regarding claim 16, Keesman et al. discloses transcoding from MPEG-2 to MPEG-2, but claim 16 specifies transcoding from MPEG-2 to WMV9.

"Microsoft Debuts New Windows Media Player 9 series" teaches that the WMV 9 codec was in public use in this country for more than one year prior to the filing date of the present application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transcoder of Keesman et al. to output WMV9 video, as taught by "Microsoft Debuts New Windows Media Player 9 Series", since "Microsoft Debuts New Windows Media Player 9 Series" states in page 3 that such a modification would produce comparable-quality video to MPEG-2 video at 1/3 the bit rate.

Regarding claim 6, the Decoding Specification of Windows Media Video 9 shows that variable-size frequency transformation (§ 3.1.13) is an inherent part of the WMV9 standard. Regarding claim 9, WMV9 video may perform a 4x4, 4x8, 8x4, or 8x8 frequency transform (§ 3.2.3.15), but MPEG-2 is limited to only an 8x8 frequency transform. Regarding claim 10, WMV9 video uses multiple Huffman tables to perform variable-length coding depending on the quantizer scale of the macroblock, (§ 4.1.3.4), but MPEG-2 is limited to only one Huffman table for inter blocks. See ISO/IEC 13818-2: 1995(E), pg. 65.

Regarding claim 24, the transcoder of Keesman et al. may also take into account field/frame prediction and field/frame coding (pg. 497: column 1). Regarding claims 25 and 26, it is inherent that in the MPEG-2 format which Keesman et al. takes as input,

and consequently, takes in field/frame information, a frame itself is set as two independent field pictures or as a frame picture at the frame level, but in a frame picture, individual blocks may be encoded as frame blocks or as field blocks. See Watkinson, *The MPEG Handbook*, § 5.15 (pp. 275-281).

Regarding claim 27, the transcoder of Keesman et al. outputs video at a lower bit-rate than the input video (abstract). Regarding claim 28, as previously mentioned, WMV9 video is approximately 3 times more efficient than MPEG-2 video. Regarding claim 29, the transcoder of Keesman et al. may be implemented in software (pg. 497: column 1).

11. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keesman et al. in view of Youn et al. as applied to claim 3 above, and further in view of "Microsoft Debuts New Windows Media Player 9 Series". Regarding claim 4, the Decoding Specification of Windows Media Video 9, as cited in Provisional Application 60/488,710, shows that loop filtering (§ 3.1.6) and intensity compensation (§ 3.2.1.16) are inherent parts of the WMV9 standard. Likewise, regarding claim 5, the Decoding Specification also shows that a 4MV-coding mode (§ 3.2.2.2) and quarter-pixel motion vector coding modes (§ 3.2.1.16) are also inherent parts of the WMV standard.

12. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Youn et al. in view of "Microsoft Debuts New Windows Media Player 9 Series". Youn et al. describes a generalized transcoder that can operate on multiple formats, but

does not explicitly teach transcoding to different advanced video format. Regarding claims 19 and 20, as previously mentioned, WMV9 video includes loop filtering, 4 motion vectors per macroblock, intensity compensation, quarter-pixel motion vector precision, and variable-size frequency transform blocks.

"Microsoft Debuts New Windows Media Player 9 series" teaches that the WMV 9 codec was in public use in this country for more than one year prior to the filing date of the present application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transcoder of Youn et al. to output WMV9 video, as taught by "Microsoft Debuts New Windows Media Player 9 Series", since "Microsoft Debuts New Windows Media Player 9 Series" states in page 3 that such a modification would produce comparable-quality video to prior codecs at a substantially smaller bit rate.

13. Claims 39 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Assunção et al. 1997. Claims 39 and 56 disclose storing computer-executable instructions for performing a transcoding method on a computer-readable medium, that is, a software embodiment of the present invention. Assunção et al. 1997 does not explicitly teach this limitation. However, Official Notice is taken that it would have been obvious to one having ordinary skill in the art at the time the invention was made to perform the transcoding of Assunção et al. 1997 in a software embodiment, since Assunção et al. 1997 teaches an application for the transcoder for video transmitted over the Internet, (pg. 382: column 2), and it was well-known in the art at the time the

invention was made to encode software embodiments of Internet applications such as media streaming on general-purpose computers.

14. Claims 30-33, 35-37, 40, 43, 44, and 46-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Assunção et al. 1997 in view of "Microsoft Debuts New Windows Media Player 9 series". Claim 40 teaches re-encoding video in a format with differential quantization level signaling. Assunção et al. 1997 operates on MPEG or MPEG-2 video, which do not have this feature. However, as shown in the Decoding Specification of Windows Media Video V9, it is inherent in WMV-9 format video to use differential quantization level signaling (§ 3.2.2.6).

"Microsoft Debuts New Windows Media Player 9 series" teaches that the WMV 9 codec was in public use in this country for more than one year prior to the filing date of the present application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transcoder of Assunção et al. 1997 to output WMV9 video, as taught by "Microsoft Debuts New Windows Media Player 9 Series", since "Microsoft Debuts New Windows Media Player 9 Series" states in page 3 that such a modification would produce comparable-quality video to MPEG-2 video at 1/3 the bit rate.

Regarding claim 30, Assunção et al. 1997 teaches an MPEG transcoder that achieves a reduction in bit-rate by using a coarser quantization step size (pg. 380: column 1). The transcoder receives Qin, the input quantization value (pg. 381: column 2). In the example shown, Qin is fixed as 8. The input stream of rate R1 is partially

decompressed by performing inverse quantization, and recompressed according to a second quantization function (pg. 381: columns 1-2). The second quantization step size, Qnew, depends in part on original quantization value Qin (pg. 381: column 2). However, Assunção et al. 1997 only teaches transcoding MPEG-format video, which is limited to an 8x8 frequency transformation. However, as mentioned above, the Decoding Specification of Windows Media 9 shows that it was inherent for WMV9 video to perform different frequency transformations such as 4x4, 4x8, 8x4, or 8x8 (§ 3.2.3.15).

Regarding claim 31, the Decoding Specification of Windows Media Video V9 shows that it was inherent for WMV9 video to use a modified integer transform for compression (§ 4.13), as opposed to the standard Discrete Cosine Transform X8INTRA (§ 4.12).

Regarding claim 32, this claim discloses storing computer-executable instructions for performing a transcoding method on a computer-readable medium, that is, a software embodiment of the present invention. Assunção et al. 1997 does not explicitly teach this limitation. However, Official Notice is taken that it would have been obvious to one having ordinary skill in the art at the time the invention was made to perform the transcoding of Assunção et al. 1997 in a software embodiment, since Assunção et al. 1997 teaches an application for the transcoder for video transmitted over the Internet, (pg. 382: column 2), and it was well-known in the art at the time the invention was made to encode software embodiments of Internet applications such as media streaming on general-purpose computers.

Regarding claims 33 and 35, Assunção et al. 1997 shows that it is well known that in video compression, what is typically quantized are the DCT coefficients of a macroblock (pg. 378: column 2). Regarding claim 36, in Assunção et al. 1997, Qnew also depends on the incoming bit rate Rin and a target bit rate Rtg; in order to achieve a constant bit rate output (pg. 381: column 2). Regarding claim 37, Assunção et al. 1997 states that "only when the inverse quantized coefficient lies in the same coarse quantization interval as the original coefficient, will no additional distortion be introduced by requantisation" (pg. 378: column 2–pg. 379: column 1).

Regarding claim 43, the transcoder of Assunção et al. 1997 receives Qin, the input quantization value (pg. 381: column 2). In the example shown, Qin is fixed as 8. The input stream of rate R1 is partially decompressed by performing inverse quantization, and recompressed according to a second quantization function (pg. 381: columns 1-2). The second quantization step size, Qnew, depends in part on original quantization value Qin (pg. 381: column 2). Although the new quantization level may be larger, it is still in the same coarse quantization interval, to limit the amount of distortion produced (pg. 378: column 2–pg. 379: column 1). However, the present invention differs from Assunção et al. 1997 in that in the present invention, video is transcoded to a more efficient second format, and in Assunção et al. 1997, video is transcoded to the original format.

"Microsoft Debuts New Windows Media Player 9 series" teaches that the WMV 9 codec was in public use in this country for more than one year prior to the filing date of

the present application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transcoder of Assunção et al. 1997 to output WMV9 video, as taught by "Microsoft Debuts New Windows Media Player 9 Series", since "Microsoft Debuts New Windows Media Player 9 Series" states in page 3 that such a modification would produce comparable-quality video to MPEG-2 video at 1/3 the bit rate.

Regarding claim 44, in Assunção et al. 1997, bitrate is tracked at the slice level. However, in a mode with a fixed number of slices per frame, such as SIF, this becomes equivalent to tracking bitrate at the picture level (pg. 381: column 2). Regarding claims 46 and 47, "Microsoft Debuts New Windows Media Player 9 series" explicitly states in page 3 that WMV9 produces video at "approximately one-third the bit rate of MPEG-2" with "the same quality". Regarding claims 48-51, as mentioned above, the Decoding Specification of Windows Media Video V9 states that WMV9 video includes advanced coding techniques such as loop filtering (§ 3.1.6), four motion vectors per macroblock (§ 3.2.2.2), intensity compensation (§ 3.2.1.16), quarter-pixel motion vector precision (§ 3.2.1.16), variable-sized frequency transform (§ 3.2.3.15), and advanced entropy coding (§ 4.1.3.4). Advanced motion vector modes such as 4MV that are not in MPEG-2 are encompassed in the "different prediction modes for motion vectors" of claim 50.

Regarding claim 52, this claim discloses storing computer-executable instructions for performing a transcoding method on a computer-readable medium, that is, a software embodiment of the present invention. Assunção et al. 1997 does not explicitly teach this limitation. However, Official Notice is taken that it would have been obvious

to one having ordinary skill in the art at the time the invention was made to perform the transcoding of Assunção et al. 1997 in a software embodiment, since Assunção et al. 1997 teaches an application for the transcoder for video transmitted over the Internet, (pg. 382: column 2), and it was well-known in the art at the time the invention was made to encode software embodiments of Internet applications such as media streaming on general-purpose computers.

15. Claims 34 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Assunção et al. 1997 in view of "Microsoft Debuts New Windows Media Player 9 series" as applied to claims 30 and 43 above, and further in view of US Patent 6,084,909 A (Chiang et al.). Claim 34 of the present invention specifies setting a quantization level for a video based on an average of obtained quantization levels. However, in Assunção et al. 1997, incoming quantization levels are assumed to be fixed at one level.

Chiang et al. teaches an MPEG video coder. Quantizer 257 in the coder performs a 3-step process of target bit allocation, rate control, and adaptive quantization (column 6: lines 40-42). In target bit allocation, first, a picture's complexity is computed as the product of the number of bits in the picture and the average quantization value for the picture (column 6: lines 43-52). This value is used to determine the target bit count for the picture's GOP (column 6: lines 57-60). Regarding claim 45, the quantizer also computes a normalized activity measure for each macroblock of the picture,

depending on an activity level for the current macroblock, and the mean activity level for the entire frame up to the current macroblock (column 7: line 52–column 6: line 9).

Assunção et al. 1997, combined with "Microsoft Debuts New Windows Media Player 9 series", discloses the claimed invention except for details of quantization. Chiang et al. teaches that it was known to adjust quantization on a per-macroblock basis based on an average macroblock quantization value. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the rate controller of Chiang et al. for the rate controller of Assunção et al. 1997 to control the bit rate of output encoded video, since it has been held that substituting one known equivalent element known in the art for another to obtain predictable results involves only routine skill in the art. See *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

16. Claims 54 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Assunção et al. 1997 in view of "Buffer Analysis and Control in CBR Transcoding" (Assunção et al. 2000), cited in the Information Disclosure Statement of 15 April 2007. Claim 54 discloses adjusting a constant bit rate transcoder based on buffer fullness. However, the transcoder of Assunção et al. 1997 does not contain buffers (page 380: column 2).

Assunção et al. 2000 teaches a transcoder for a Constant Bit Rate (CBR) network. Regarding claim 54, in a CBR transmission path, buffering is required (pg. 84: column 1). A transcoder in the transmission path with a variable compression ratio

must also include an input buffer for smoothing (pg. 86: column 2). To control the output of the transcoder to a constant bit rate, quantizer scale q_k' depends on buffer occupancy B(k) (pg. 89: column 1). Regarding claim 55, in one embodiment, average buffer occupancy Bavg(k) is recursively defined according to the buffer occupancy Bavg(k-1) of the previous macroblock and current picture type (pg. 89: column 2). This smoothes out the inherent different complexity of different picture types, with I-pictures more complex than P-pictures or B-pictures (pg. 88: column 1).

Assunção et al. 1997 discloses the claimed invention except for providing a buffer in a transcoder. Assunção et al. 2000 teaches that it was known to buffer the input of a transcoder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add an input buffer to the transcoder of Assunção et al. 1997, as taught by Assunção et al. 2000, since Assunção et al. 2000 states in page 84, column 1 that such a modification is necessary to enable a variable-compression transcoder in a CBR network.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,259,741 B1 (Chen et al.) teaches a system for transcoding video from 4:2:2 color format to 4:2:0 format. US Patent 6,434,197 B1 (Wang et al.) teaches a transcoder that re-uses incoming motion vectors for output video.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571) 272-9662. The examiner can normally be reached on Monday-Friday from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri, can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DNW

Mehrdad Dastouri
MEHRDAD DASTOURI
SUPERVISORY PATENT EXAMINER
TC 2600